

REMARKS

Claims 1-22 are pending in this application.

Claims 1-22 are rejected.

In the office action dated May 22, 2002, claims 1-6, 10-11 and 13-16 are rejected under 35 USC §102(b) as being anticipated by Parkin U.S. Patent No. 5,966,012. Claim 9 is rejected under 35 USC §103(a) as being unpatentable over Parkin in view of Gallagher et al. U.S. Patent No. 5,640,343; claims 12 and 17 are rejected under 35 USC §103(a) as being unpatentable over Parkin in view of Monsma et al. U.S. Patent No. 6,269,018; claims 18 and 20-22 are rejected under 35 USC §103(a) as being unpatentable over Parkin in view of Gallagher et al. and Monsma et al.; and claim 19 is rejected under 35 USC §103(a) as being unpatentable over Parkin in view of Gallagher et al., Monsma et al. and Gurney et al. U.S. Patent No. 5,4408,377.

Claims 7-8

Claims 7 and 8 are rejected under 35 USC §112, second paragraph, as being indefinite. No '102 or '103 rejections of claims 7 and 8 have been made. Claim 7 has been amended to overcome the '112 rejection and should now be allowable. Claim 8, which depends from claim 7, should also be allowable.

Claims 1-6 and 9-12

Replacement claim 12 recites a ferromagnetic cladding for the synthetic ferrimagnet reference layer. The original subject matter of claim 12 is now recited in replacement claim 1.

The '102 rejection of claim 1 has been rendered moot by the replacement

claim 1. Replacement claim 1 recites an unpinned synthetic ferrimagnet reference layer. The unpinned reference layer has a magnetization vector that can be oriented in first and second directions.

In contrast, the cited documents all disclose pinning layers for pinning the magnetization vectors of the reference layers. Parkin discloses an AF pinning layer 116 at col. 6, lines 1+; Gallagher et al. disclose an AF pinning layer 18 at col. 4, line 20; and Gurney et al. disclose a pinning layer 41 at col. 4, line 44+ and a pinning layer 81 at col. 6, lines 4+.

Monsma et al. disclose a device 50 including a lower pinned ferromagnetic layer 51 and a tunnel junction 52. The tunnel junction 52 is assumed to have a conventional structure, such as that disclosed on col. 2, lines 61+. The conventional structure includes an antiferromagnetic layer 15 (see col. 2, line 65).

Because the cited documents do not teach or suggest an unpinned synthetic ferrimagnet reference layer, claim 1 and its dependent claims 2-6 and 9-12 should be allowable.

Claims 13-17

Claims 13-17 have been cancelled.

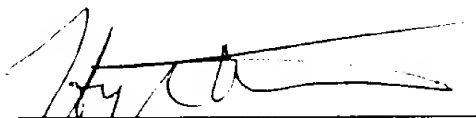
Claims 18-22

The '103 rejections of claims 18-22 are respectfully traversed. Claim 18 recites a reference layer having a magnetization that can be switched between first and second directions during read and write operations. As discussed above, the cited documents describe pinned reference layers.

The Examiner is respectfully requested to withdraw the rejections and issue

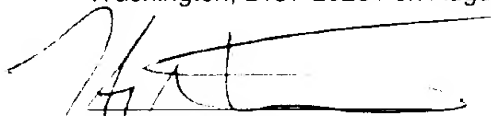
a notice of allowability. If any issues remain, the Examiner is invited to contact the undersigned.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner of Patents, Washington, D.C. 20231 on August 22, 2002.



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. A magnetic memory device comprising:
a data layer having a magnetization that can be oriented in first and second directions; and
an unpinned synthetic ferrimagnet reference layer, ~~the data and reference layers~~
~~having different coercivities.~~

7. A magnetic memory device ~~The device of claim 1,~~ further comprising:
a data layer having a magnetization that can be oriented in first and second
directions;
a synthetic ferrimagnet reference layer, the data and reference layers having
different coercivities;
a first conductor on the ~~first~~ reference layer, ~~1~~
an electrical insulator on the first conductor, ~~1~~ and
a second conductor on the insulator.

12. The device of claim 1, further comprising a ferromagnetic cladding for wherein
~~the reference layer is not pinned.~~